# *RESEARCHPLAN PROPOSAL*

**A Comparative study of College and University female players on motor fitness components and Physiological variables**

**For registration to the degree of Doctor of Philosophy**

**IN THE FACULTY OF ARTS &SOCIAL SCINCE**

# The IIS University, Jaipur.

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# Project Title:

## *A Comparative study of college and university female players on motor fitness components and Physiological variables*

### ***INTRODUCTION***

Sports form an important aspect of life. They play a vital role in bringing about physical, mental and social growth of individual Best few decades has witnessed many on innovations in this area. Sports are becoming increasingly sophisticated technically and gaining popularity as separate profession with expansion of educational facilities in the country. More young people are taking part in sports as a daily feature of their life. The participation in sports and physical fitness increases an individual's productivity; it also promotes social harmony and discipline.

Various latest techniques and tactics based on scientific principles are introduced for coaching of various sports and games. Many diverse conditions can be improved by the judicious control of all exercise and activity program. The perfect knowledge of physiological aspects of exercise is essential to prescribe the individualized type of exercise program to` meet the particular need of each person.

It is unwise to build a pyramid at the top without having built a base first. Similarly specialization in a branch of knowledge cannot be possible if the general concepts in the discipline are not clearly understood. This is very much applicably in case of physical education programme, where skills and techniques of any sport or game should be basically and mastered in the first instant.

The degree to which the cardio-vascular fitness contributes to a particular games or sports depends upon the type and variety of movements involved in them. In sports training much emphasis is laid on those components of physical fitness, which are most fundamental to those sports. For example training of long distance runner, cardio-vascular & muscular endurance are of prime importance, while for sprinting, development of strength, speed is given greater importance. Same is true in training of games such as Football, Basketball, Volleyball, Swimming etc. The complex nature of

physical fitness includes the muscular strength, muscular endurance, cardio- respiratory endurance and the most important of them is the cardio- respiratory endurance.

By nature human being are competitive and aspire from excellence in every field. Sport is not an exception. Changes are the order of the day. Changes are taking place every day in every walk of life. Life of people, their philosophy, ways of living etc. are undergoing changes due to basic and applied research in various fields. Man has reached the Space age from the primitive Stone Age because of continuous change. New techniques are developed in laboratories and scientific methods are applied to obtain top-level performance. Sports by their very nature are enjoyable, challenging, absorbing and require a certain amount of skill and physical condition.

With all round advancement in the science of sports the new disciplines are emerging with micro-specializations. The elements, of scientific basis of selection are being inducted in the procedure of selection of athletes at various levels in some of the advanced countries. The knowledge from many scientific disciplines is being used for improving the criteria for the selection of talents. The physical educationists have designed test procedures for evaluating the fitness of young children. The structure of performance for different games and events is being worked out. The general physical fitness of top—ranking athletes has been evaluated. Human growth and performance is also an important field in this regard. The physiological factors limiting one's performance in sports are also well known. It is the understanding of interaction of all these factors that can help us in designing the way for selecting the children for appropriate game and training.

During the last decade in many advanced countries, the “Muscle Biopsy” technique, whereby samples from skeletal muscles of healthy people are obtained and have been widely applied “to catch them young” Recently, “histological and histochemical techniques have also been applied to identify different fibre types in the skeletal muscles of man. This is then used to correlate the contractile characteristics of their functions and metabolic potentialities in various athletic events by determining different enzyme activities. It has become popular to determine muscle fibres

composition of athletes involved in different types of events. Regarding the relative distribution of ST (slow twitch) and FT (Fast twitch) fibres, the most interesting findings are that long distance runner has a marked predominance of ST (slow twitch) fibres in their leg muscles.

## ***REVIEW OF RELATED LITERATURE***

This chapter deals with literature related to the present study. The research scholar has gone through all the available literature and the literature found relevant to the present study has been presented in this chapter.

**KAUR .G. - (2008**): conducted cross- sectional study on premenopausal women aged 25 to 40 years. They were divided into two groups: active and sedentary. Various anthropometric measurements were taken by following standard techniques. Body mass index waist- hip ratio and per cent fat mass, per cent muscle mass, and per cent bone mass were calculated. The findings of the study reveal that active women are significantly taller, lighter, leaner and more muscular than sedentary women. This may be due to the effect of regular physical activity, on their body.

**Nataraj H.V., Chandrakumar M.(2008)** : conducted study on motor abilities in different proportions. He took one hundred junior national male kabaddi players for the study. The result indicated that amongst the selected motor ability variables muscular endurance of arms, explosive power of legs and arms predict the performance of junior male kabaddi players, and were the dominant abilities.

**Beaudet (2007)**: conducted a study on the comparison of selected physiological parameters in men and women of similar aerobic capacity.

Physiological parameters involved in oxygen transport were compared in men and women of similar aerobic capacities as assessed by maximum oxygen uptake. The parameters of cardiac output, cardiac output divided by body weight, hemoglobin, concentration, and percent body fat were examined to detect differences that might analysis indicated that cardiac output increased with fitness level increases and was greater in men. Hemoglobin concentration was greater in men but did not very due to fitness level. Present body fat as greater in women and decreased with increased in fitness level. The data indicated that the initial hypothesis that women would manifest larger cardiac output values when divided by body weight was not supported.

**Singh P., Dube A., Agnihotri M. (2006)**: selected 15 subjects randomly to study the effect of six week dynamic intervention training programme on physiological & physical fitness. A significant improvement ('.t" value of 4.46 was greater than the table value of 2.048 required '.t" test to be significant a: 0.05 level with 28 degree of freedom) was observed in muscular strength and endurance of arms. A similar change was notified in the resting pulse rate and VO2 max and no significant change was notified in blood pressure and agility and speed of the athletes.

**Pratap (2005)**: conducted a study on selected coordinative abilities on 80 male Inter-University level judokas, 10 from each weight category with the purpose to compare the coordinative abilities of judokas among different weight categories. The selected coordinative abilities were Reaction ability, Orientation ability, Differentiation ability, Balance ability and Rhythm ability. To compare coordinative abilities of judokas among different weight categories, Analysis of variance (ANOVA) was employed at 0.5 level of significance. On the basis of results, the following conclusions were drawn: No

significance difference was found in different weight categories in relation to orientation ability (1.874). Significant difference was found in different weight categories in relation to differentiation ability (6.659), Reaction ability (7.279), Balance ability (8.445) and Rhythm ability (2.160).

***Zhou (2004):*** To follow up our previous study in which the male subjects were investigated, the attempt of the current study was to find out the variables that best explained the variance in VO2 max for the trained and untrained college female students.

Ten college female students (untrained =UT) and ten collegiate female distance runners (trained= TR) were recruited and volunteered to participate in this study. VO2 max, Q. max, and HR max were measured during a graded exercise test (GXT).

**Ghosh (2002)** conducted a study on selected co-coordinative abilities on 15 male sprinters and 15 male jumpers of L.N.I.P.E. with the purpose to find out the of co-ordinate ability between the all of track events and abilities & fields events. The variables selected for the study were orientation ability, Differentiation ability, Reaction ability, Balance ability and Rhythm ability. T. Ratio on all the variables for males and females was applied on the basis of the results following conclusion were drawn:-

In case of Orientation ability and reaction ability there was a significant difference between the sprinters and jumpers

On the other hand in case of differentiation ability, Balance ability and Rhythm ability there was no significant difference between the sprinter and jumper.

It was observed from the findings of the study that the co-coordinative abilities of sprinters and jumpers did not differ completely.

**Puri (1985)** conducted a study on selected Motor fitness components on the members of Kabaddi and Kho-Kho team of L.N.I.P.E. with the purpose to find out the motor fitness components between Kabaddi and Kho-Kho players.

The variables selected for the study were speed, cardio respiratory endurance, agility and strength. 't' test was applied to find out the mean differences in various physical fitness components. On the basis of result following conclusion was drawn:

There is no significant difference in motor fitness components between Kho-Kho and Kabaddi players.

There is no significant relationship between kho-kho and kabaddi players in motor fitness components.

**Slater and Hammel (1995)** undertook another study to compare reaction time measures to visual stimulates and arm movement. The purpose of study was to compare reaction time measure for arm displacement and visual stimulus. Compare reaction time measures for selected group of physical education measures and liberal art measures. Analysis of the data revealed that only a modest relationship exited between the two reaction time measures. Significant difference in reaction time existed among several group for both reaction measures.

**Chakraborty (1986)** studied the relationship of selected physique characteristics and motor components to the performance in soccer. Twenty male soccer players who represented in all India Intervarsity tournament were selected as subjects. Analysis of

data revealed that there was a significant relationship between soccer performance and maximum leg strength and soccer performance and speed and also soccer performance and endurance, whereas in case of height, weight, fore leg length, thigh length, shoulder width, trunk width, ponderal index, crural index and soccer performance did not seem to have significant relationship.

**Thomas (1991)** studied the relationship of motor components and anthoropometric variable to the velocity of basketball throw. Motor fitness components chosen were wrist strength, arm strength and back strength, wrist and shoulder flexibility, speed of movement of Arms and anthropometric variables were upper arm length, lower arm length and total arm length with height, sitting height, weight and leg length.Twenty-five male basketball players in the profession of Physical Education was chosen as the subjects for the study. Analysis of data showed that there is the significant correlation between the velocity of long and hook basketball players and anthropometric variables.

**Burke and Brush (1979)** conducted a study to assess physiological and anthropometric measures of teenage female distance runners who had been training regularly by running approximately 50 miles per week for two years. Their mean $V0_2$ max of 63.24 ml/kg is among the highest ever recorded in a group of young women. Anthropometric measures included selected segments: length, diameters, skin folds and circumference. These young women appeared to be of average height, low in body weight and sub–cutaneous body fat, have a high component of ectomorphy and smaller overall skeletal frame-work than non– athletes.

## ***SIGNIFICANCE OF THE STUDY***

The present study may be helpful in the following manners: -

1) It will be helpful to differentiate and motor fitness variables physiological variables possessed by different levels of athletes and their relation to their performance.

2) From the practical standpoint, this study is important for coaches and trainer to adjust training regimes and concentrate on the variables that are specific to improve performance 'and achieve success in the sports and games.

3) In future, due consideration may be given by the selectors to the motor fitness variables and coordinative abilities which are most related to the higher performance.

4) The study will be reveal true facts about players..

5) The study will be help the physical education teachers and coaches to scan the prospective Hockey players.

6) Study may be useful in classification of student on the basis of physiological variables and coordinative abilities even in the absence of a physical education teacher or coach.

The outcome of the study will be useful in evaluating the degree of adaptive changes that are brought out by such stre

## ***STATEMENT OF THE PROBLEM***

A purpose of the study was to investigate the significance different between motor fitness components and Physical variables of college & University female players.

***Objective of the study***

1. To provide a basic foundation in those aspects of physiology that was be required for further studies in exercise physiology.
2. To bring students with a diversity of life science background, to a common level of understanding of the physiological principles important in the responses of the human body to sport and exercise.
3. Increase their understanding of how physiology factors influence involvement and performance in sport, exercise, and physical education settings.
4. Increase their understanding of how participation in sport, exercise, and physical education contributes to individual growth and development.
5. Explore and learn in-depth about the application of sport world-class performance levels. Physiology principles by eminent athletes who achieve.

***DELIMITIONS***

1. The study was delimited to the following selected physiological variables.

- Vital capacity
- Blood pressure
- Resting Heart rate
- Hemoglobin

2. The study was delimited to the following selected motor fitness variables.

a. Muscular endurance of arm shoulder

b. Muscular strength.

c. Agility.

d. Speed.

e. Cardio-vascular endurance.

f. Balance

3. The study was delimited to the student of 17-22 years of age.

4. The study was also be delimited to two levels of players.

a. College players

b. University players

***LIMITATION***

Non-availability of sophisticated instruments for the collection of data was considered as the limitation of this study.

## ***HYPOTHESIS***

From the scholar's own understanding of the problem and as gleaned through the literature, it is hypothesized.

1.) The motor fitness components performances may be different in nature.

2.) Physiological variables performance may be different in nature.

# ***Definitions and expiation of the terms***

## ***Motor fitness components***

***Muscular strength:***The greatest amount of force a muscle or muscle group can exert in a single effort.

***Muscular endurance:*** The ability of a Muscle or muscle group to perform repeated movement with a sub-maximal force for extended periods of time.

***Flexibility;*** The ability to move the joints (for example, elbow, knee) or any group of joints through an entire normal range of emotions.

***Agility***: The ability to perform a series of explosive power movements in rapid succession in opposing direction (e.g. Zigzag running or cutting movements)

***Speed:*** t he capacity of moving a body part on the whole body with the greatest possible speed

***Endurance:*** the ability to do movements involving large number of muscles, at a slow pace for prolonged period e.g. walking, jogging and swimming.

## ***Physiological Variables***

***Blood Pressure***: is the pressure exerted on the walls of the arteries as the heart pumps blood through the body. T he reading is made systolic and diastolic in mm/Hg.

***Resting Heart Rate:*** A wave of distinction and recoil after systolic ejection of blood in the periphery arteries.

***Vital capacity:*** The amount of air expired after maximum inspiration is called vital capacity.

***Cardiovascular Endurance:*** is developed through the using Continuous running training method (duration run) to improve maximum oxygen intake (vo2 max) and internal training to improve the heart as a muscular pump.

***Hemoglobin:***

# METHODOLOGY

## *PROCEDURE*

In this chapter selection of subjects, selection of variables, criterion measures, collection of data, experimental design, administrations of tests and statistical technique for the analysis of data have been described.

### SELECTION OF SUBJECTS

The subjects for this study will be selected from the college and University of Rajasthan, Jaipur. Total of 200 female subjects will be selected 100 from each level i.e. College and University

### SELECTION OF VARIABLES

The study will be taken on the basis of available Literature on Physiological Variables and Motor Fitness and their tests findings of the related research studies. Keeping in the mind about specific purpose of the study to, the following Physiological Variables and motor fitness were selected:

## Physiological Variables

a) Vital Capacity

b) Blood Pressure

c) Resting Heart Rate

d) $VO_2$ Max

e) Haemoglobin

## Motor Fitness Variables.

a) Muscular endurance of arm shoulder

b) Muscular strength.

c) Agility.

d) Speed.

e) Cardio-vascular endurance

f) Balance

**CRITERION MEASURES**

Criterion measures for testing the hypothesis were following: -

1. Vital Capacity will be measured by dry Spiro meter and will be recorded in litres.
2. Resting Heart Rate will be measured by counting number of heart beats per minute and will be recorded in numbers.
3. Blood pressure will be measured by Sphygmomanometer.
4. $VO_2$ Max. Will be measured by Harward Step Test.
5. Physical fitness variables will be measured by AAHPER Youth fitness test.
6. Reaction Time will be measured by the ball reaction exercise test and will be recorded in centimetres.
7. Balance ability will be measured by using long nose test and will be recorded in seconds.

## COLLECTION OF DATA

The data of Rajasthan players will be collected during Inter-collegiate and intervarsity championship. Necessary instruction will be given to the subjects before administration of the test of selected Motor fitness Variables as suggested by peter Hirtz.[1]

## STATISTICAL TECHNIQUE FOR ANALYSIS OF DATA

To characterize College and University Players to their standard human performance measures by selected physiological variables and Motor fitness Variables abilities, mean, standard and't' test will be used.

## *LIMITATION*

Non-availability of sophisticated instruments for the collection of data was considered as the limitation of this study.

# BIBLIOGRAPHY

**Barar Tejendra Singh** cardio- respiratory endurance and physiological change resulting from interval running with varied stimulus density, unpublished doctoral dissertation, jiwaji university Gwalior, 1982.

**Girish K.Tuteja** "Comparison of Physical Fitness of Rural and Urban School students." (Unpublished Master's Thesis, Jiwaji University 1976).

**Jerry R.Shockey-**"A comparison of low frequency long duration and high frequency, high frequency short duration exercise." Completed Research in Health, Physical Education and Recreation 22(1980):74,1

**John Alexander, Stephen l.martin and Kenneth Metz**," effects of a four week training program on certain physical fitness component of conditioned male university student "research quarterly 39:1(march 968):16-24

**Kenneth h, cooperate** al. "An aerobic conditioning program for the fort worth, Texas school district" research quarterly 46:3(October 1975):345

**Salph Layd**, "A Comparison of Physical Fitness of Negro and White Boys of same taxes".

**Siddhu S.L and Singh M.** "Relationship of body and composition and standing broad jump of Physical Education majors 1992,(NIS Scientific Journal vol.15),PP-111-13.

**Suzanme Michael beauder**: a comparison of selected physiology parameters in men and women of similar aerobic capacity. Dissertation abstracts international 40: z (August 1979:736-A)